

SEQUENCE LISTING

<110> Aventis Pharma SA  
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PRADES, Catherine  
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LEMOINE, Cendrine  
DEAN, Michael  
DENEFFLE, Patrice

<120> NUCLEIC ACIDS OF THE HUMAN ABCA12 GENE, VECTORS CONTAINING SUCH NUCLEIC ACIDS, AND USES THEREOF

<130> 03806.0537

<150> US 60/267,715

<151> 2001-02-12

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<170> PatentIn version 3.0

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Pro Val Ile Ile Phe Ile Ile Leu Ala Ile Thr Arg Thr Lys Phe Pro  
35 40 45  
Pro Thr Ala Lys Pro Thr Cys Tyr Leu Ala Pro Arg Asn Leu Pro Ser  
50 55 60  
Thr Gly Phe Phe Pro Phe Leu Gln Thr Leu Leu Cys Asp Thr Asp Ser  
65 70 75 80  
Lys Cys Lys Asp Thr Pro Tyr Gly Pro Gln Asp Leu Leu Arg Arg Lys  
85 90 95  
Gly Ile Asp Asp Ala Leu Phe Lys Asp Ser Glu Ile Leu Arg Lys Ser  
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Ser Asn Leu Asp Lys Asp Ser Ser Leu Ser Phe Gln Ser Thr Gln Val  
115 120 125  
Pro Glu Arg Arg His Ala Ser Leu Ala Thr Val Phe Pro Ser Pro Ser  
130 135 140  
Ser Asp Leu Glu Ile Pro Gly Thr Tyr Thr Phe Asn Gly Ser Gln Val  
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Ser Glu Asp Ile Arg Arg Glu Leu Cys Asp Ser Tyr Ser Gly Tyr Ile  
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Val	Trp	Asn	Glu 340	Asp	Asp	Gly	Gln	Thr 345	Leu	Ser	Pro	Ser	Ser 350	Leu	Ala
Ala	Gln	Leu 355	Leu	Ile	Leu	Glu	Asn 360	Phe	Glu	Asp	Ala	Leu 365	Leu	Asn	Ile
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Thr	Glu	Ile	Ala	Ala 485	Ser	Leu	Leu	Tyr	His 490	Asp	Asn	Val	Ile	Ser 495	Lys
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Met	Asp	Gln 515	Phe	Leu	Glu	Gln	Ala 520	Leu	Gln	Met	Asn	Tyr 525	Leu	Glu	Asn
Ile	Thr 530	Gln	Leu	Ile	Pro	Ile 535	Ile	Glu	Ala	Met	Leu 540	His	Val	Asn	Asn
Ser 545	Ala	Asp	Ala	Ser	Glu 550	Lys	Pro	Gly	Gln	Leu 555	Leu	Glu	Met	Phe	Lys 560
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Leu	His	Tyr	Leu	Asn	Ile	Tyr	Asn	Phe	Thr	Asp 645	Lys	Val	Phe	Phe	Pro



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Tyr Met Lys Met Met Gly Val Asn Ser Cys Ser His Phe Phe Ala  
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Tyr Gly Met Ala Ala Pro Trp Tyr Phe Pro Ile Leu Pro Ser Tyr  
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Trp Lys Glu Arg Phe Gly Cys Ala Glu Val Lys Pro Glu Lys Ser  
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Tyr Glu 1370	Gly His Ile Thr	Ser 1375	Leu Leu Gly Pro	Asn 1380	Gly Ala Gly
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His Thr 1415	Val Arg Lys Asn	Met 1420	Gly Val Cys Met	Gln 1425	His Asp Val
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Glu Pro 1505	Ser Thr Gly Val	Asp 1510	Pro Cys Ser Arg	Arg 1515	Ser Ile Trp
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Gln Lys Asn Ser Ala Met 1670	Ser Leu Glu His Leu 1675	Thr Gln Lys Lys 1680
Ile Gly Asn Ser Asn Ala 1685	Asn Gly Ile Ser Thr 1690	Pro Asp Asp Leu 1695
Ser Val Ser Ser Ser Asn 1700	Phe Thr Asp Arg Asp 1705	Asp Lys Ile Leu 1710
Thr Arg Gly Glu Arg Leu 1715	Asp Gly Phe Gly Leu 1720	Leu Leu Lys Lys 1725
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Tyr Pro Glu Ile Gln Ile 1775	Ser Pro Ser Leu Tyr 1780	Gly Thr Ser Glu 1785
Gln Thr Ala Phe Tyr Ala 1790	Asn Tyr His Pro Ser 1795	Thr Glu Ala Leu 1800
Val Ser Ala Met Trp Asp 1805	Phe Pro Gly Ile Asp 1810	Asn Met Cys Leu 1815
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Trp Asn Thr Ser Gly Glu 1835	Pro Ile Thr Asn Phe 1840	Gly Val Cys Ser 1845
Cys Ser Glu Asn Val Gln 1850	Glu Cys Pro Lys Phe 1855	Asn Tyr Ser Pro 1860
Pro His Arg Arg Thr Tyr 1865	Ser Ser Gln Val Ile 1870	Tyr Asn Leu Thr 1875
Gly Gln Arg Val Glu Asn 1880	Tyr Leu Ile Ser Thr 1885	Ala Asn Glu Phe 1890
Val Gln Lys Arg Tyr Gly 1895	Gly Trp Ser Phe Gly 1900	Leu Pro Leu Thr 1905
Lys Asp Leu Arg Phe Asp 1910	Ile Thr Gly Val Pro 1915	Ala Asn Arg Thr 1920
Leu Ala Lys Val Trp Tyr 1925	Asp Pro Glu Gly Tyr 1930	His Ser Leu Pro 1935
Ala Tyr Leu Asn Ser Leu 1940	Asn Asn Phe Leu Leu 1945	Arg Val Asn Met 1950

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 1970 1975 1980  
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 2000 2005 2010  
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2330						2335					2340			
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2345						2350					2355			
His	Gly	Ile	Pro	Glu	Lys	Asp	Ile	Lys	Glu	Thr	Val	His	Lys	Leu
2360						2365					2370			
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2390						2395					2400			
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2405						2410					2415			
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Asn	Gly	Lys	Phe	Gln	Cys	Ile	Gly	Ser	Leu	Gln	His	Ile	Lys	Ser
2465						2470					2475			
Arg	Phe	Gly	Arg	Gly	Phe	Thr	Val	Lys	Val	His	Leu	Lys	Asn	Asn
2480						2485					2490			
Lys	Val	Thr	Met	Glu	Thr	Leu	Thr	Lys	Phe	Met	Gln	Leu	His	Phe
2495						2500					2505			
Pro	Lys	Thr	Tyr	Leu	Lys	Asp	Gln	His	Leu	Ser	Met	Leu	Glu	Tyr
2510						2515					2520			
His	Val	Pro	Val	Thr	Ala	Gly	Gly	Val	Ala	Asn	Ile	Phe	Asp	Leu
2525						2530					2535			
Leu	Glu	Thr	Asn	Lys	Thr	Ala	Leu	Asn	Ile	Thr	Asn	Phe	Leu	Val
2540						2545					2550			
Ser	Gln	Thr	Thr	Leu	Glu	Glu	Val	Phe	Ile	Asn	Phe	Ala	Lys	Asp
2555						2560					2565			
Gln	Lys	Ser	Tyr	Glu	Thr	Ala	Asp	Thr	Ser	Ser	Gln	Gly	Ser	Thr
2570						2575					2580			
Ile	Ser	Val	Asp	Ser	Gln	Asp	Asp	Gln	Met	Glu	Ser			

2585

2590

2595

&lt;210&gt; 6

&lt;211&gt; 2516

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; Xaa

&lt;222&gt; (1)..(2516)

&lt;223&gt; Xaa = any amino acid

&lt;400&gt; 6

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Leu Gly Val Lys Arg Gln Pro Leu Trp Thr Leu Val Leu Ile Leu Trp  
20 25 30

Pro Val Ile Ile Phe Ile Ile Leu Ala Ile Thr Arg Thr Lys Phe Pro  
35 40 45

Pro Thr Ala Lys Pro Thr Cys Tyr Leu Ala Pro Arg Asn Leu Pro Ser  
50 55 60

Thr Gly Phe Phe Pro Phe Leu Gln Thr Leu Leu Cys Asp Thr Asp Ser  
65 70 75 80

Lys Cys Lys Asp Thr Pro Tyr Gly Pro Gln Asp Leu Leu Arg Arg Lys  
85 90 95

Gly Ile Asp Asp Ala Leu Phe Lys Asp Ser Glu Ile Leu Arg Lys Ser  
100 105 110

Ser Asn Leu Asp Lys Asp Ser Ser Leu Ser Phe Gln Ser Thr Gln Val  
115 120 125

Pro Glu Arg Arg His Ala Ser Leu Ala Thr Val Phe Pro Ser Pro Ser  
130 135 140

Ser Asp Leu Glu Ile Pro Gly Thr Tyr Thr Phe Asn Gly Ser Gln Val  
145 150 155 160

Leu Ala Arg Ile Leu Gly Leu Glu Lys Leu Leu Lys Gln Asn Ser Thr  
165 170 175

Ser Glu Asp Ile Arg Arg Glu Leu Cys Asp Ser Tyr Ser Gly Tyr Ile  
180 185 190

Val Asp Asp Ala Phe Ser Trp Thr Phe Leu Gly Arg Asn Val Phe Asn  
195 200 205

Lys Phe Cys Leu Ser Asn Met Thr Leu Leu Glu Ser Ser Leu Gln Glu  
29

210

215

220

Leu Asn Lys Gln Phe Ser Gln Leu Ser Ser Asp Pro Asn Asn Gln Lys  
 225 230 235 240

Ile Val Phe Gln Glu Ile Val Arg Met Leu Ser Phe Phe Ser Gln Val  
 245 250 255

Gln Glu Gln Lys Ala Val Trp Gln Leu Leu Ser Ser Phe Pro Asn Val  
 260 265 270

Phe Gln Asn Asp Thr Ser Leu Ser Asn Leu Phe Asp Val Leu Arg Lys  
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Ala Asn Ser Val Leu Leu Val Val Gln Lys Val Tyr Pro Arg Phe Ala  
 290 295 300

Thr Asn Glu Gly Phe Arg Thr Leu Gln Lys Ser Val Lys His Leu Leu  
 305 310 315 320

Tyr Thr Leu Asp Ser Pro Ala Gln Gly Asp Ser Asp Asn Ile Thr His  
 325 330 335

Val Trp Asn Glu Asp Asp Gly Gln Thr Leu Ser Pro Ser Ser Leu Ala  
 340 345 350

Ala Gln Leu Leu Ile Leu Glu Asn Phe Glu Asp Ala Leu Leu Asn Ile  
 355 360 365

Ser Ala Asn Ser Pro Tyr Ile Pro Tyr Leu Ala Cys Val Arg Asn Val  
 370 375 380

Thr Asp Ser Leu Ala Arg Gly Ser Pro Glu Asn Leu Arg Leu Leu Gln  
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Ser Thr Ile Arg Phe Lys Lys Ser Phe Leu Arg Asn Gly Ser Tyr Glu  
 405 410 415

Asp Tyr Phe Pro Pro Val Pro Glu Val Leu Lys Ser Lys Leu Ser Gln  
 420 425 430

Leu Arg Asn Leu Thr Glu Leu Leu Cys Glu Ser Glu Thr Phe Ser Leu  
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Ile Glu Lys Ser Cys Gln Leu Ser Asp Met Ser Phe Gly Ser Leu Cys  
 450 455 460

Glu Glu Ser Glu Phe Asp Leu Gln Leu Leu Glu Ala Ala Glu Leu Gly  
 465 470 475 480

Thr Glu Ile Ala Ala Ser Leu Leu Tyr His Asp Asn Val Ile Ser Lys  
 485 490 495

Lys Val Arg Asp Leu Leu Thr Gly Asp Pro Ser Lys Ile Asn Leu Asn  
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Met Asp Gln Phe Leu Glu Gln Ala Leu Gln Met Asn Tyr Leu Glu Asn  
 515 520 525

Ile Thr Gln Leu Ile Pro Ile Ile Glu Ala Met Leu His Val Asn Asn  
 530 535 540

Ser Ala Asp Ala Ser Glu Lys Pro Gly Gln Leu Leu Glu Met Phe Lys  
 545 550 555 560  
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Asn Val Glu Glu Leu Lys Glu Asp Leu Arg Arg Thr Thr Gly Met Ser  
 565 570 575  
 Asn Arg Thr Ile Asp Lys Leu Leu Ala Ile Pro Ile Pro Asp Asn Arg  
 580 585 590  
 Ala Glu Ile Ile Ser Gln Val Phe Trp Leu His Ser Cys Asp Thr Asn  
 595 600 605  
 Ile Thr Thr Pro Lys Leu Glu Asp Ala Met Lys Glu Phe Cys Asn Leu  
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 Ser Leu Ser Glu Arg Ser Arg Gln Ser Tyr Leu Ile Gly Leu Thr Leu  
 625 630 635 640  
 Leu His Tyr Leu Asn Ile Tyr Asn Phe Thr Asp Lys Val Phe Phe Pro  
 645 650 655  
 Arg Lys Asp Gln Lys Pro Val Glu Lys Met Met Glu Leu Phe Ile Arg  
 660 665 670  
 Leu Lys Glu Ile Leu Asn Gln Met Ala Ser Gly Thr His Pro Leu Leu  
 675 680 685  
 Asp Lys Met Arg Ser Leu Lys Gln Met His Leu Pro Arg Ser Val Pro  
 690 695 700  
 Leu Thr Gln Ala Met Tyr Arg Ser Asn Arg Met Asn Thr Pro Gln Gly  
 705 710 715 720  
 Ser Phe Ser Thr Ile Ser Gln Ala Leu Cys Ser Gln Gly Ile Thr Thr  
 725 730 735  
 Glu Tyr Leu Thr Ala Met Leu Pro Ser Ser Gln Arg Pro Lys Gly Asn  
 740 745 750  
 His Thr Lys Asp Phe Leu Thr Tyr Lys Leu Thr Lys Glu Gln Ile Ala  
 755 760 765  
 Ser Lys Tyr Gly Ile Pro Ile Asn Thr Thr Pro Phe Cys Phe Ser Leu  
 770 775 780  
 Tyr Lys Asp Ile Ile Asn Met Pro Ala Gly Pro Val Ile Trp Ala Phe  
 785 790 795 800  
 Leu Lys Pro Met Leu Leu Gly Arg Ile Leu His Ala Pro Tyr Asn Pro  
 805 810 815  
 Val Thr Lys Ala Ile Met Glu Lys Ser Asn Val Thr Leu Arg Gln Leu  
 820 825 830  
 Ala Glu Leu Arg Glu Lys Ser Gln Glu Trp Met Asp Lys Ser Pro Leu  
 835 840 845  
 Phe Met Asn Ser Phe His Leu Leu Asn Gln Ala Ile Pro Met Leu Gln  
 850 855 860  
 Asn Thr Leu Arg Asn Pro Phe Val Gln Val Phe Val Lys Phe Ser Val  
 865 870 875 880  
 Gly Leu Asp Ala Val Glu Leu Leu Lys Gln Ile Asp Glu Leu Asp Ile  
 885 890 895

Leu Arg Leu Lys Leu Glu Asn Asn Ile Asp Ile Ile Asp Gln Leu Asn  
 900 905 910  
 Thr Leu Ser Ser Leu Thr Val Asn Ile Ser Ser Cys Val Leu Tyr Asp  
 915 920 925  
 Arg Ile Gln Ala Ala Lys Thr Ile Asp Glu Met Glu Arg Glu Ala Lys  
 930 935 940  
 Arg Leu Tyr Lys Ser Asn Glu Leu Phe Gly Ser Val Ile Phe Lys Leu  
 945 950 955 960  
 Pro Ser Asn Arg Ser Trp His Arg Gly Tyr Asp Ser Gly Asn Val Phe  
 965 970 975  
 Leu Pro Pro Val Ile Lys Tyr Thr Ile Arg Met Ser Leu Lys Thr Ala  
 980 985 990  
 Gln Thr Thr Arg Ser Leu Arg Thr Lys Ile Trp Ala Pro Gly Pro His  
 995 1000 1005  
 Asn Ser Pro Ser His Asn Gln Ile Tyr Gly Arg Ala Phe Ile Tyr  
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 Arg Asn Ser Gln Glu Ile Ala Val Gln Val Gln Ala Ile Pro Tyr  
 1040 1045 1050  
 Pro Cys Phe Met Lys Asp Asn Phe Leu Thr Ser Val Ser Tyr Ser  
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 Leu Pro Ile Val Leu Met Val Ala Trp Val Val Phe Ile Ala Ala  
 1070 1075 1080  
 Phe Val Lys Lys Leu Val Tyr Glu Lys Asp Leu Arg Leu His Glu  
 1085 1090 1095  
 Tyr Met Lys Met Met Gly Val Asn Ser Cys Ser His Phe Phe Ala  
 1100 1105 1110  
 Trp Leu Ile Glu Ser Val Gly Phe Leu Leu Val Thr Ile Val Ile  
 1115 1120 1125  
 Leu Ile Ile Ile Leu Lys Phe Gly Asn Ile Leu Pro Lys Thr Asn  
 1130 1135 1140  
 Gly Phe Ile Leu Phe Leu Tyr Phe Ser Asp Tyr Ser Phe Ser Val  
 1145 1150 1155  
 Ile Ala Met Ser Tyr Leu Ile Ser Val Phe Phe Asn Asn Thr Asn  
 1160 1165 1170  
 Ile Ala Ala Leu Ile Gly Ser Leu Ile Tyr Ile Ile Ala Phe Phe  
 1175 1180 1185  
 Pro Phe Ile Val Leu Val Thr Val Glu Asn Glu Leu Ser Tyr Val  
 1190 1195 1200  
 Leu Lys Val Phe Met Ser Leu Leu Ser Pro Thr Ala Phe Ser Tyr  
 1205 1210 1215  
 Ala Ser Gln Tyr Ile Ala Arg Tyr Glu Glu Gln Gly Ile Gly Leu  
 32





Phe	Leu	Glu	Gln	Gly	Gly	Leu	Arg	Cys	Cys	Gly	Ser	Pro	Phe	Tyr
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Leu	Lys	Glu	Ala	Phe	Gly	Asp	Gly	Tyr	His	Leu	Thr	Leu	Thr	Lys
	1565					1570					1575			
Lys	Lys	Val	Phe	Leu	Asn	Leu	Thr	Lys	Glu	Ser	Gln	Lys	Asn	Ser
	1580					1585					1590			
Ala	Met	Ser	Leu	Glu	His	Leu	Thr	Gln	Lys	Lys	Ile	Gly	Asn	Ser
	1595					1600					1605			
Asn	Ala	Asn	Gly	Ile	Ser	Thr	Pro	Asp	Asp	Leu	Ser	Val	Ser	Ser
	1610					1615					1620			
Ser	Asn	Phe	Thr	Asp	Arg	Asp	Asp	Lys	Ile	Leu	Thr	Arg	Gly	Glu
	1625					1630					1635			
Arg	Leu	Asp	Gly	Phe	Gly	Leu	Leu	Leu	Lys	Lys	Ile	Met	Ala	Ile
	1640					1645					1650			
Leu	Ile	Lys	Arg	Phe	His	His	Ala	Arg	Arg	Asn	Trp	Lys	Gly	Leu
	1655					1660					1665			
Ile	Ala	Gln	Val	Ile	Leu	Pro	Ile	Val	Phe	Val	Thr	Thr	Ala	Met
	1670					1675					1680			
Gly	Leu	Gly	Thr	Leu	Arg	Asn	Ser	Ser	Asn	Ser	Tyr	Pro	Glu	Ile
	1685					1690					1695			
Gln	Ile	Ser	Pro	Ser	Leu	Tyr	Gly	Thr	Ser	Xaa	Gln	Thr	Ala	Phe
	1700					1705					1710			
Tyr	Ala	Asn	Tyr	His	Pro	Ser	Thr	Glu	Ala	Leu	Val	Ser	Ala	Met
	1715					1720					1725			
Trp	Asp	Phe	Pro	Gly	Ile	Asp	Asn	Met	Cys	Leu	Asn	Thr	Ser	Asp
	1730					1735					1740			
Leu	Gln	Cys	Leu	Asn	Lys	Asp	Ser	Leu	Glu	Lys	Trp	Asn	Thr	Ser
	1745					1750					1755			
Gly	Glu	Pro	Ile	Thr	Asn	Phe	Gly	Val	Cys	Ser	Cys	Ser	Glu	Asn
	1760					1765					1770			
Val	Gln	Glu	Cys	Pro	Lys	Phe	Asn	Tyr	Ser	Pro	Pro	His	Arg	Arg
	1775					1780					1785			
Thr	Tyr	Ser	Ser	Gln	Val	Ile	Tyr	Asn	Leu	Thr	Gly	Gln	Arg	Val
	1790					1795					1800			
Glu	Asn	Tyr	Leu	Ile	Ser	Thr	Ala	Asn	Glu	Phe	Val	Gln	Lys	Arg
	1805					1810					1815			
Tyr	Gly	Gly	Trp	Ser	Phe	Gly	Leu	Pro	Leu	Thr	Lys	Asp	Leu	Arg
	1820					1825					1830			
Phe	Asp	Ile	Thr	Gly	Val	Pro	Ala	Asn	Arg	Thr	Leu	Ala	Lys	Val
	1835					1840					1845			
Trp	Tyr	Asp	Pro	Glu	Gly	Tyr	His	Ser	Leu	Pro	Ala	Tyr	Leu	Asn
	1850					1855					1860			

Ser	Leu 1865	Asn	Asn	Phe	Leu	Leu 1870	Arg	Val	Asn	Met	Ser 1875	Lys	Tyr	Asp
Ala	Ala 1880	Arg	His	Gly	Ile	Ile 1885	Met	Tyr	Ser	His	Pro 1890	Tyr	Pro	Gly
Val	Gln 1895	Asp	Gln	Glu	Gln	Ala 1900	Thr	Ile	Ser	Ser	Leu 1905	Ile	Asp	Ile
Leu	Val 1910	Ala	Leu	Ser	Ile	Leu 1915	Met	Gly	Tyr	Ser	Val 1920	Thr	Thr	Ala
Ser	Phe 1925	Val	Thr	Tyr	Val	Val 1930	Arg	Glu	His	Gln	Thr 1935	Lys	Ala	Lys
Gln	Leu 1940	Gln	His	Ile	Ser	Gly 1945	Ile	Gly	Val	Thr	Cys 1950	Tyr	Trp	Val
Thr	Asn 1955	Phe	Ile	Tyr	Asp	Met 1960	Val	Phe	Tyr	Leu	Val 1965	Pro	Val	Ala
Phe	Ser 1970	Ile	Gly	Ile	Ile	Ala 1975	Ile	Phe	Lys	Leu	Pro 1980	Ala	Phe	Tyr
Ser	Glu 1985	Asn	Asn	Leu	Gly	Ala 1990	Val	Ser	Leu	Leu	Leu 1995	Leu	Leu	Phe
Gly	His 2000	Ala	Thr	Phe	Ser	Trp 2005	Met	Tyr	Leu	Leu	Ala 2010	Gly	Leu	Phe
His	Glu 2015	Thr	Gly	Met	Ala	Phe 2020	Ile	Thr	Tyr	Val	Cys 2025	Val	Asn	Leu
Phe	Phe 2030	Gly	Ile	Asn	Ser	Ile 2035	Val	Ser	Leu	Ser	Val 2040	Val	Tyr	Phe
Leu	Ser 2045	Lys	Glu	Lys	Pro	Asn 2050	Asp	Pro	Thr	Leu	Glu 2055	Leu	Ile	Ser
Glu	Thr 2060	Leu	Lys	Arg	Ile	Phe 2065	Leu	Ile	Phe	Pro	Gln 2070	Phe	Cys	Phe
Gly	Tyr 2075	Gly	Leu	Ile	Glu	Leu 2080	Ser	Gln	Gln	Gln	Ser 2085	Val	Leu	Asp
Phe	Leu 2090	Lys	Ala	Tyr	Gly	Val 2095	Glu	Tyr	Pro	Asn	Glu 2100	Thr	Phe	Glu
Met	Asn 2105	Lys	Leu	Gly	Ala	Met 2110	Phe	Val	Ala	Leu	Val 2115	Ser	Gln	Gly
Thr	Met 2120	Phe	Phe	Ser	Leu	Arg 2125	Leu	Leu	Ile	Asn	Glu 2130	Ser	Leu	Ile
Lys	Lys 2135	Leu	Arg	Leu	Phe	Phe 2140	Arg	Lys	Phe	Asn	Ser 2145	Ser	His	Val
Arg	Glu 2150	Thr	Ile	Asp	Glu	Asp 2155	Glu	Asp	Val	Arg	Ala 2160	Glu	Arg	Leu
Arg	Val 2165	Glu	Ser	Gly	Ala	Ala 2170	Glu	Phe	Asp	Leu	Val 2175	Gln	Leu	Tyr
Cys	Leu	Thr	Lys	Thr	Tyr	Gln	Leu	Ile	His	Lys	Lys	Ile	Ile	Ala

2180	2185	2190
Val Asn 2195	Asn Ile Ser Ile Gly 2200	Ile Pro Ala Gly Glu 2205
Leu Leu 2210	Gly Val Asn Gly Ala 2215	Gly Lys Thr Thr Ile 2220
Leu Thr 2225	Gly Asp Ile Ile Pro 2230	Ser Ser Gly Asn Ile 2235
Asn Lys 2240	Thr Gly Ser Leu Gly 2245	His Val Asp Ser His 2250
Val Gly 2255	Tyr Cys Pro Gln Glu 2260	Asp Ala Leu Asp Asp 2265
Val Glu 2270	Glu His Leu Tyr Phe 2275	Tyr Ala Arg Val His 2280
Glu Lys 2285	Asp Ile Lys Glu Thr 2290	Val His Lys Leu Leu 2295
His Leu 2300	Met Pro Phe Lys Asp 2305	Arg Ala Thr Ser Met 2310
Gly Thr 2315	Lys Arg Lys Leu Ser 2320	Thr Ala Leu Ala Leu 2325
Pro Ser 2330	Ile Leu Leu Leu Asp 2335	Glu Pro Ser Ser Gly 2340
Lys Ser 2345	Lys Arg His Leu Trp 2350	Lys Ile Ile Ser Glu 2355
Asn Lys 2360	Cys Ser Val Ile Leu 2365	Thr Ser His Ser Met 2370
Glu Ala 2375	Leu Cys Thr Arg Leu 2380	Ala Ile Met Val Asn 2385
Gln Cys 2390	Ile Gly Ser Leu Gln 2395	His Ile Lys Ser Arg 2400
Gly Phe 2405	Thr Val Lys Val His 2410	Leu Lys Asn Asn Lys 2415
Glu Thr 2420	Leu Thr Lys Phe Met 2425	Gln Leu His Phe Pro 2430
Leu Lys 2435	Asp Gln His Leu Ser 2440	Met Leu Glu Tyr His 2445
Thr Ala 2450	Gly Gly Val Ala Asn 2455	Ile Phe Asp Leu Leu 2460
Lys Thr 2465	Ala Leu Asn Ile Thr 2470	Asn Phe Leu Val Ser 2475
Leu Glu 2480	Glu Val Phe Ile Asn 2485	Phe Ala Lys Asp Gln 2490
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